ABSTRACT

A pressure vessel capable of withstanding elevated hydrostatic pressures, and elevated temperature comprises a tubular cylindrical casing capable of withstanding extreme hydrostatic pressures having an internal cavity and a first and second opening at each end permitting access to said internal cavity. The internal cavity is divided into a first and second cylindrical plug region extending inward from the first and second opening and a hollow interior region.

An optical component is in the hollow interior having at least a plurality of optical fiber pigtails extending from said optical component. A first and second cylindrical plug is force fit into first and second plug regions. At least one plug has a through-hole for receiving and passing at least some of the optical fiber pigtails to a position outside of the pressure vessel. At least one plug has a ceramic adhesive plug formed in a necked-down through-hole by inserting adhesive into the through-hole and filling substantially all of the void space within the through-hole not occupied by the optical fiber pigtails. The adhesive is allowed to encapsulate the leads or optical fibers passing through the through-hole to seal the opening. The plug has a channel machined into its outer circumference to receive an O-ring, the O-ring providing an additional seal between the plug and the tubular casing. A cap is formed to cover over and beyond the outer surface of the plug using a polymer adhesive.